

The American FERTILIZER

PATENTED
DEC'D
JAN 3 1949

All Fertilizer and Feeding Materials



1850—1948

POTASH SALTS
SULPHATE of AMMONIA
NITRATE of SODA
NITROGENIC TANKAGE
(Activated Sludge)
DEFLUORINATED PHOSPHATE

Importers

Exporters

PERUVIAN BIRD GUANO, FISH MEAL
BONE MEAL, TANKAGE, BLOOD
NITROGENOUS

98 Years of Service

H. J. BAKER & BRO.

271 Madison Avenue, New York

BALTIMORE

•

CHICAGO

•

SAVANNAH

•

BUENOS AIRES



wait for lightning — and starve!

Lightning and rain together nourish the soil with nitrogen. But on this diet alone, the earth and its people would starve. So the farmer looks to other, more dependable sources. Even so, the net annual loss of nitrogen from the soil runs into millions of tons. More nitrogen is needed—quickly, economically, and in quantity. The richest,

most economical source of this vital plant-food is ammonia.

CSC is producing anhydrous ammonia at its Dixie Plant at Sterlington, Louisiana. Working at full capacity, Commercial Solvents is supplying the major part of its output to Gulf Coast manufacturers for conversion into nitrogen-rich fertilizers.



AGRICULTURAL DIVISION, COMMERCIAL SOLVENTS CORPORATION, 17 EAST 42nd STREET, NEW YORK 17, N. Y.

Published every other Saturday. Annual subscription: in the United States, \$3.00; Canada and Mexico, \$4.00 other countries, \$5.00. Entered as second-class matter, January 15, 1910, at the Post Office at Philadelphia, Pa., under Act of March 3, 1879. Registered in United States Patent Office. Publication office, 1900 Chestnut St., Phila. 3, Pa.



Florida Pebble Phosphate
ALL COMMERCIAL GRADES
Tennessee Phosphate

Achan Mine

produces special purpose International Phosphate

Larger tonnages of special purpose Florida phosphate have been produced by International since its Achan Mine was brought into production approximately two years ago in order to meet the increasing market demands.

The output of Achan Mine is a coarse pebble phosphate. It is particularly well suited for such special applications as the production of electrothermal phosphorus and of liquid phosphoric acid by wet processes.

International operates three mines in the center of Florida's richest phosphate field: Achan, Peace Valley and Noralyn with its recently completed facilities for storage, drying and shipping. The output of Peace Valley and Achan Mines is handled through the storage, drying, grinding and shipping plant at Mulberry. At these operations, International has greater production capacity and is producing more phosphate than ever before to meet the urgent needs of world-wide markets.

Phosphate Division, International Minerals & Chemical Corporation

General Offices: 20 North Wacker Drive,



Chicago 6.

A Complete Service

THE strategic factory locations of The American Agricultural Chemical Company, as shown on the accompanying map, assure prompt, dependable service for the complete line of products listed below.

We manufacture all grades of Commercial Fertilizers, Superphosphate, Agrinite Tankage, Bone Black, Bone Black Pigments (Cosmic Black), Bone Ash, Bone Oil, Dicalcium Phosphate, Monocalcium Phosphate, Gelatin, Agricultural Insecticides (including Pyrox, Arsenate of Lead, Calcium Arsenate, etc.), Trisodium and Disodium Phosphate, Phosphorus, Phosphoric Acid, Sulphuric Acid, Ammonium Carbonate, Ammonium Fluosilicate, Magnesium Fluosilicate, Potassium Fluosilicate, Phosphorus Pentasulphide, Phosphorus Sesquisulphide (lump), Zinc Fluosilicate, Salt Cake; and we are importers and/or dealers in Nitrate of Soda, Cyanamid, Potash Salts, Sulphate of Ammonia, Raw Bone Meal, Steamed Bone Meal, Sheep and Goat Manure, Fish and Blood. We mine and sell all grades of Florida Pebble Phosphate Rock.



FACTORIES

Alexandria, Va.	Cleveland, Ohio	No. Weymouth, Mass.
Baltimore, Md.	Detroit, Mich.	Pensacola, Fla.
Buffalo, N. Y.	Fulton, Ill.	Pierce, Fla.
Carteret, N. J.	Greensboro, N. C.	Port Hope, Ont., Can.
Cayce, S. C.	Havana, Cuba	Savannah, Ga.
Chambly Canton, Quebec, Can.	Henderson, N. C.	Searsport, Maine
Charleston, S. C.	Montgomery, Ala.	South Amboy, N. J.
Cincinnati, Ohio	Nat. Stockyards, Ill.	Spartanburg, S. C.
	Norfolk, Va.	

The AMERICAN AGRICULTURAL CHEMICAL Co.

50 Church Street, New York 7, N. Y.

SALES OFFICES

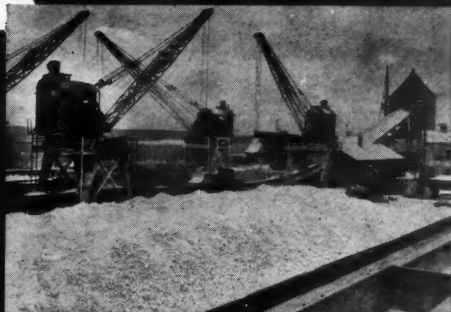
Alexandria, Va.	Clinton, Iowa	Laurel, Miss.	Pensacola, Fla.
Baltimore, Md.	Columbia, S. C.	Montgomery, Ala.	Pierce, Fla.
Buffalo, N. Y.	Detroit, Mich.	Montreal, Quebec, Can.	Port Hope, Ont., Can.
Carteret, N. J.	Greensboro, N. C.	National Stockyards, Ill.	Savannah, Ga.
Charleston, S. C.	Havana, Cuba	New York, N. Y.	Spartanburg, S. C.
Cincinnati, Ohio	Henderson, N. C.	Norfolk, Va.	Wilmington, N. C.
Cleveland, Ohio	Houlton, Me.	No. Weymouth, Mass.	



Producers of

SULPHUR

Large stocks at our
mines make possible
prompt shipments



Uniformly high purity of 99½% or better

Free of arsenic, selenium and tellurium

TEXAS GULF  SULPHUR CO. INC.
75 East 45th St. New York 17, N. Y.
Mines: Newgulf and Moss Bluff, Texas

NOW LION *Nitrogen* SOLUTIONS

HELP YOU INCREASE

THE NITROGEN
CONTENT OF YOUR
MIXED FERTILIZERS

and
Lower your Costs

You get these

EXTRAS

EXTRA QUALITY

EXTRA NITROGEN

EXTRA PROFITS

Lion Nitrogen Solutions give you the means of using maximum amounts of both ammonia nitrogen and nitrate nitrogen in your mixed fertilizers. Lion Nitrogen Solutions give you more nitrogen per dollar. Properly used, they produce fertilizers that cure rapidly, store well and drill efficiently. That means extra profit for you because Lion Nitrogen Solutions supply in one operation the nitrogen that is usually added separately by several nitrogen carriers.

Write to Lion Oil Company, Chemical Division, El Dorado, Arkansas for complete details today.

LION NITROGEN SOLUTIONS—COMPOSITION

LION SOLUTIONS	AMMONIUM NITRATE %	ANHYDROUS AMMONIA %	WATER %	NITROGEN CONTENT (%)		
				NITRATE %	AMMONIA %	TOTAL
NITROGEN SOLUTION... 1	65.0	21.7	13.3	11.38	29.22	40.6
NITROGEN SOLUTION... 2	55.5	26.0	18.5	9.71	31.10	40.8
NITROGEN SOLUTION... 3	66.8	16.6	16.6	11.69	25.34	37.0

Chemical Division
LION OIL COMPANY
EL DORADO, ARKANSAS



The American FERTILIZER

Vol. 109

NOVEMBER 13, 1948

No. 10

Some Rates of Fertility Decline*

By W. A. ALBRECHT

Department of Soils, University of Missouri, Columbia, Missouri

JUST how rapidly the fertility of a soil is declining may be as baffling as the question concerning the opposite effect, how rapidly a soil can be built up. To the latter we can only reply, "Very slowly." To the former, we must, unfortunately, answer "Very rapidly."

As a consequence of the rapid decline in fertility and the slow rate of its restoration, the more productive soil areas under cultivation are shrinking. Land is being taken out of production faster than we desire. Some suggested rates of fertility decline are coming to us from farmer experience and from soil-crop studies. They are putting the rate of disappearance of the soil fertility more nearly on a time basis. They are giving answers in numbers of years by which we may well look into the future. Unfortunately, however, these numbers of years before yields will be put below continuance of economic production are much smaller than we like to have them.

Pastures Decline Rapidly

Perhaps one would not expect that pastures are recording very accurately a high rate of soil fertility decline, when so much emphasis is being put upon grass for protection against erosion. But pastures are usually the less fertile soil areas of the farm. It is for this reason that such soils are not put into tilled crops, but are commonly put to, or left in, grass. Naturally, we have no accurate meas-

ure, like bushels of grain, of the decline over the years in the fertility under grass. However, when one takes inventory of the increasing incidence of weeds—which incidence of a crop that the cow won't eat is the reciprocal of the disappearance of good grass that the cow takes readily—there are accumulating data in terms of years to tell us how rapidly the fertility is being pushed down below the level needed for cow-satisfying herbage.

The incidence of broom sedge (*Andropogon virginicus*) is one of these indicators. Its advance over the country from the East toward the West has been considered alarming by some folks. Its increasing prominence in late autumn during its ripening and scattering of seed and its fuzzy whiteness that makes its name "Old Man's Beard" very appropriate have caused extensive concern. That it is not eaten by the livestock and that it remains as a tall growth in the pasture through the winter tell us that its food value is so low that it will not even tempt animals. There is the suggestion, then, that in her refusal to eat broom sedge the cow is reporting on the rate of the decline of soil fertility. She is telling us that the soil, which once made feeds for her, is now making only bulk of no feed value according to her judgment.

The transition from a virgin soil supporting good permanent timothy to one with only broom sedge may be measured as years from the records of Sanborn Field at the University of Missouri. Two plots there have been in timothy continuously since 1888. One of

* Reprinted from *Better Crops with Plant Food*, October, 1948.

these had no soil treatment except that of being plowed out and reseeded when the overseer thought it was so foul with weeds that reseeding was necessary. It has been in this grass continuously with no more attention than the annual hay harvest. The other plot alongside, also in timothy, has been given six tons of manure annually. It has been plowed each time that it was necessary to plow the weedy companion plot in order to keep the tillage treatments of these two plots alike.

The plot given manure up to this date has not yet suffered from the incidence of weeds. On the plot with no treatment, the seeding of timothy lasts now scarcely two years before weeds take over. In 1945 the broom sedge had completely taken this plot. But the broom sedge had not crossed the border lines to the adjoining timothy plot alongside given manure, nor had it gone to the roadways at the ends in continuous bluegrass.

Even this timothy, now for less than 60 years, has exhausted the fertility to the point where reseeding fails to hold much of this crop past the year of seeding. Here was cropping to a grass agriculture for but a little more than half a century to tell us that even this much-publicized system of farming for a permanent cover to guard against the erosive effects of running water needs more than merely this special system of cropping. It is suggesting that any system of cropping must be undergirded by a regular and generous flow of fertility from (a) the organic matter in decay, or (b) the exchangeable store adsorbed on the colloid, or (c) the breakdown of the mineral reserves. It is directing attention to the fertility flow that is keeping well filled those assembly lines of agriculture hidden away within the soil.

Mesquite Crowds Out Grass

The westward march of mesquite (*Prosopis glandulosa*) across the Southwest Plains to occupy what was once considered good range pastures is another trouble, equally as disturbing as the weed problem in the fenced pastures. While the mowing machine and hormone sprays may be consolation to some folks worried about the weeds in the pastures, such tools and treatments can scarcely be feasible helps on the extensive range areas going to mesquite so completely and so speedily.

The Forest Service has cited the short time of 40 years in the Santa Rita Mountains, with their low annual rainfall, as the time required to exhaust the soil fertility by only grazing, and to push the soil's productivity down from

good range for cattle to mesquite brush. Here again the figure is near the half century mark. It is small, even under the livestock system of using the land, and is the lifetime of the fertility supply at the respectable nutritive level of the short grass and its limited production of vegetative bulk.

The Decline of Tilled Soil

Under tillage, the decline of the fertility of the soil would be expected to be more rapid. But even under such treatment, one cannot arrive at the longevity of the productivity by considering only the system of land use. Here too, the flow of fertility from the assembly lines of the soil determines the number of years it can hold out under the cropping pressure. Once more Sanborn Field, but this time under continuous wheat, gives some duration figures as years from its plot with no fertility return—not even the straw—since 1888.

This plot demonstrated a gradual decline of wheat yields from 1888 onward for almost 40 years before its nearly complete crop failures became so evident. These crop failures have now become almost regular occurrences in alternate years since 1925. Here are some suggestions: (a) That the virgin supply of soil organic matter is almost completely exhausted, with the former store of actively decaying humus no longer helping much to make the seed crops, (b) that the mineral reserves in their breakdown are contributing at a rate too slow for annual crops, and (c) that the clay colloid is not restocked with exchangeable nutrients by the October seeding after the crop's exhaustion of them in the preceding July harvest.

In the case of the continuous wheat, like the cases for the pastures and the ranges, the nearly half century of regular productivity was the limit given us for this prairie soil prevailing in northeast Missouri. After less than a half century this soil became what might be called an alternate-year bearer, or a regular biennial reproducer, because of the insufficient flow of the essential inorganic nutrients from the soil. The decline in the supply of soil fertility during but a half century has recorded itself as a failure in the crop to reproduce itself as even the equivalent of the necessary seed, and then only when seed from outside sources for this plot was used.

Do such records have any implications for tree crops as well as for grain crops when we remind ourselves that it is the older apple trees that become "alternate-year," or "biennial" bearers of apple crops while young

(Continued on page 28)

Hardening Plants with Potash*

By CHARLES B. SAYRE

New York Agricultural Experiment Station, Geneva, New York

IT IS well known that nitrogen fertilizers will make plants grow rapidly, and all plant growers make extensive use of nitrogen. While a rapid growth is usually desirable, especially with vegetables, there are circumstances when too rapid growth may result in plants that are too soft and tender especially if they are to be transplanted. Also, with some crops such as tomatoes an excessive vegetative growth may delay fruit setting. Under such circumstances "hardening" the plants or checking the soft vegetative growth is desirable.

Moreover, if plants, such as late cabbage plants, are grown in outdoor beds the temperature, and often the water, cannot be regulated. Under such conditions one good way to "harden" plants is to fertilize them with potash. Because of the greater activity of the potash ion in the soil this will balance or inhibit somewhat the uptake of nitrogen and produce plants with firmer, stiffer stems and higher carbohydrate content that will stand transplanting better.

This was illustrated in some experiments in growing tomato plants at Geneva. These plants were all grown under uniform conditions in the greenhouse and coldframes, using a regular greenhouse composted soil to which was added various ratios of nitrogen, phosphorus, and potash. Tomato seedlings of uniform size were transplanted to flats containing different ratios of these fertilizers.

Shorter Stiffer Seedlings

Each of the flats received the same amount of nitrogen and phosphorus, but varying amounts of potash in the fertilizer mixture (0, 6 per cent, 12 per cent). The seedlings receiving no potash, after three weeks, were the largest, were very dark green; and had made a soft, succulent growth. The seedlings receiving a complete fertilizer containing 6 per cent potash were shorter and stiffer. The 12 per cent potash group grew stockier, had stiffer stems and the foliage was olive green in color.

When these plants were eight weeks old, at which time they were transplanted to the field, the plants without potash were 16 inches tall, dark green and had green, soft, succulent stems. Those receiving 6 per cent potash in the fertilizer mixture were 16½ inches tall and medium green in color with firm stems with some purple coloring (a sign of hardening) in the stems. The plants receiving 12 per cent potash in the fertilizer were one inch shorter with olive green foliage and stiff, firm stems. Expert plant growers who were asked to judge the different lots, rated this lot as the most desirable type for transplanting to the field. Their judgment was verified by the results when these various lots were transplanted to the field. The plants that received the high potash fertilizer required fewer replants and produced a larger crop of early tomatoes.

Success With Cabbage Plants

At the time these tomato plants were in the coldframe an extensive grower of field-grown cabbage plants, came to the Experiment Station seeking advice as to how he could salvage several million cabbage plants that he feared would soon become too large and soft for transplanting before his customers would be ready for them. His predicament was this. His plants were growing in an extensive outdoor bed. The early part of the season had been unusually cold and rainy. As a result the plants grew very slowly, and he feared the nitrates had been leached from the soil. Consequently he applied a heavy sidedressing of nitrate of soda. Shortly thereafter the weather became unseasonably warm and his plants grew very rapidly but were making such a soft succulent growth they would not be satisfactory for transplanting.

He was shown the previously mentioned series of tomato plants in the coldframe and noted how the high potash fertilizer was "hardening" the plants. He was much impressed with the firm, stiff stems and stocky plants. He was advised to apply a sidedress-

(Continued on page 26)

*Reprinted from "Farm Research," New York Department of Agriculture, October, 1948.

Future Farmers of America Confer Degree on Woodrum

Clifton A. Woodrum, president of the American Plant Food Council, Washington, D. C., has been awarded the "Honorary American Farmer Degree" in recognition of his "outstanding service in the field of agriculture through the plant food industry and in furtherance of the programs of the Future Farmers of America."

A native of Roanoke, Va., and a Representative of the Sixth Congressional District for 23 years before resigning to accept his present position, Mr. Woodrum was honored at the 20th Future Farmers of America National Convention which was attended by 15,000 members of the organization throughout the Nation.

He is among 36 nationally-known leaders in agriculture, industry and education who were honored, including the Secretary of Agriculture, Ambassador from France, and the Administrator of the Federal Security Agency. Candidates for the degree are selected by the Board of Directors and Advisory Council of the FFA and elected by the Convention.

Prior to receiving his degree, Mr. Woodrum served with Senator James P. Kem (R-Mo.) and W. A. Roberts, Vice President, Tractor Division, Allis-Chalmers Manufacturing Co., as judges of the National FFA Public Speaking Contest held at the Convention.

While a member of Congress, Mr. Woodrum was awarded an FFA key at Virginia Polytechnic Institute for his legislative service in behalf of adequate appropriations for vocational agriculture.

Tuning Joins Spencer Chemical Sales Force

The Spencer Chemical Company has announced the appointment of J. E. Tuning as sales representative of their Fertilizer Division for the State of Nebraska. "Joe" Tuning is well known throughout the state, being a native of Nebraska and a graduate of the College of Agriculture at Lincoln. After graduation he spent 14 years in his home state as a Vocational Agricultural Instructor. After that time Mr. Tuning went with the Farm Credit Administration and with that agency he spent six years in the State of Nebraska. After a special assignment with the Nebraska Farm Bureau, Mr. Tuning went with the Lincoln Service and Supply Co. for one year.

Recently, he was with the Chipman Chemical Company of Bound Brook, N. J. His activities with the Chipman Chemical Company included the ten-state midwestern area of the company as sales representative.

Mr. Tuning will make his home in Grand Island, Neb.

U. S. D. A. Leaflet on Liquid Ammonia Fertilizer

Use of liquid ammonia as a source of nitrogen for fertilizing crops is increasing, the U. S. Department of Agriculture reports.

In a recent leaflet, Dr. M. S. Anderson of the Plant Industry Station, Beltsville, Md., reported an estimated use of about 35,000 tons of nitrogen in this form in the United States last year. While this amount is slightly more than four per cent of the total of all chemical nitrogen used in the country last year, its use is of great importance in certain agricultural regions, especially in certain irrigated areas in the Southwest where fruits and vegetables are grown.

Ammonia can be applied to the soil by means of irrigation water into which the ammonia gas has been allowed to enter at a proper rate, or by applications of liquid ammonia or its water solution directly into the soil, Dr. Anderson states.

The leaflet describes anhydrous ammonia as 82 per cent nitrogen, weighing about five pounds to the gallon. It is handled in tanks strong enough to withstand pressures around 250 pounds to the square inch.

Factors in favor of using ammonia in this way are listed as: Its relative cheapness, suitability for certain crops, ready absorption by soil, small loss through leaching, and change to nitrate at a satisfactory rate. There are several disadvantages, including the heavy equipment necessary for storing and applying the liquid or gas.

In addition to discussing briefly the use of this form of nitrogen fertilizer, the leaflet makes comparison with other sources such as ammonium sulphate. Mention is made of experimental work conducted in several States. Anyone interested in possible use of liquid ammonia as a source of nitrogen fertilizer may obtain a copy of the mimeographed leaflet, which is entitled "Liquid Ammonia as a Fertilizer," from the Plant Industry Station, Beltsville, Md., and should write to his State agricultural experiment station for recommendations regarding its use within the State.

Sidedressing Sweet Corn with Nitrogen*

By M. T. VITTUM, Geneva, N. Y.

IF NITROGEN is a limiting factor in the growth of sweet corn, increases in yield can be expected from sidedressing with a nitrogen fertilizer—provided the nitrogen is applied at the proper time and provided that adequate rainfall occurs following the sidedressing to carry the nitrogen down into the soil where it can be absorbed by the plant roots.

Nitrogen starvation in sweet corn can be easily detected by the light yellow-green color of the leaves. This yellowing, or "firing," starts at the tip of the leaf and, as the deficiency becomes more severe, works down the midrib, leaving a green margin. The symptoms first appear on the older or lower leaves of the plant.

Nitrogen deficiency can be detected before it becomes severe enough to produce actual starvation symptoms by using a simple chemical "quick test." It takes only a few seconds to cut a section from the base of the stalk and to apply a drop of the test reagent. A dark blue color indicates the presence of nitrate ions which are available for further growth of the plant while absence of this blue color indicates that there are no nitrate ions present and nitrogen starvation symptoms can be expected in the very near future if they have not already developed.

Good Results at Geneva

A good response to sidedressed nitrogen was obtained in an experiment at Geneva in 1947. Twenty-four plots of Golden Cross Bantam sweet corn were divided into six replicates consisting of four plots each. Two of the replicates were planted April 29 and were harvested August 11, two were planted May 17 and were harvested August 17, while the last two were planted June 10 and were harvested August 26.

The four sidedressing treatments were 0, 18¾, 37½, and 75 pounds of actual nitrogen per acre. This nitrogen was applied on July 14 as ammonium nitrate, which contains 33.5 per cent actual nitrogen. Thus the side-

dressing treatments corresponded to approximately 0, 56, 112, and 225 pounds of ammonium nitrate per acre, respectively. The soil was a Honeoye silt loam, with a pH of approximately 7.2.

The entire field had received an application of 800 pounds of 5-10-5 per acre drilled in before planting, which supplied 40 pounds of actual nitrogen per acre to all plots. The average stand was 25,400 plants per acre, which means approximately seven inches between plants in three-foot rows. Rainfall from July 15 to 31 was 1.72 inches; from August 1 to 11, 2.41 inches; from August 12 to 17, 0.92 inch; and from August 18 to 26, 1.13 inches.

EFFECT OF NITROGEN SIDEDRESSING ON THE YIELD OF GOLDEN CROSS BANTAM SWEET CORN GROWN AT GENEVA IN 1947

Nitrogen applied per acre as sidedressing, pounds*	Acre yield in tons†	Increase over no nitrogen, tons	Approximate cost of nitrogen	Average weight per ear, ounces†
0	4.2	—	—	6.2
18¾	4.8	0.6	\$2.00	6.6
37½	5.1	0.9	4.00	6.9
75	5.1	0.9	8.00	6.9

* 800 pounds of 5-10-5 per acre drilled in on all plots before planting.

† Average of six replicates.

Sources of Nitrogen

The inorganic nitrogen used in commercial fertilizers occurs in either the nitrate or the ammonium form. In general, the nitrate form of nitrogen is more quickly available to plant roots than is the ammonium form. This is especially true when the nitrogen is applied as a sidedressing.

All of the nitrogen in nitrate of soda and half of the nitrogen in ammonium nitrate occurs in the nitrate form. The other half of the nitrogen in ammonium nitrate and all of the nitrogen in sulphate of ammonia occur in the ammonium form.

(Continued on page 28)

* From Farm Research, New York Department of Agriculture, July, 1948.

THE AMERICAN FERTILIZER

ESTABLISHED 1894

PUBLISHED EVERY OTHER SATURDAY BY
WARE BROS. COMPANY
1900 CHESTNUT ST., PHILADELPHIA 3, PA.

A Magazine international in scope and circulation devoted
exclusively to the Commercial Fertilizer Industry and its
Allied Industries

PIONEER JOURNAL OF THE FERTILIZER INDUSTRY

A. A. WARE, Editor
K. F. WARE, Advertising Manager

ANNUAL SUBSCRIPTION RATES

U. S. and its possessions, also Cuba and Panama.....	\$3.00
Canada and Mexico.....	4.00
Other Foreign Countries.....	5.00
Single Copy.....	.25
Back Numbers.....	.50

THE AMERICAN FERTILIZER is not necessarily in accord with
opinions expressed in contributed articles that appear in its
columns. Copyright, 1948, by Ware Bros. Company.

Vol. 109 NOVEMBER 13, 1948 No. 10

Principal Articles in This Issue

	PAGE
SOME RATES OF FERTILITY DECLINE, by W. A. Albrecht.....	7
HARDENING PLANTS WITH POTASH, by Charles B. Sayre.....	9
Future Farmers of America Confer De- gree on Woodrum.....	10
U. S. D. A. Leaflet on Liquid Ammonia Fertilizer.....	10
SIDEDRESSING SWEET CORN WITH NI- TROGEN, by M. T. Vittum.....	11
World Nitrogen Supply Still Short.....	12
Potash Deliveries, Third Quarter.....	13
Potato Production Goals and Price Sup- port Lowered.....	14
FERTILIZER MATERIALS MARKET	
New York.....	15
Philadelphia.....	16
Charleston.....	16
Chicago.....	20
September Superphosphate Production Drops.....	22

World Nitrogen Supply Still Short

Although world production of nitrogen has increased steadily since the end of the war, the gap between requirements and supplies remains almost as great as during the past three years, the Food and Agricultural Organization reported at its fourth annual conference in Washington during the week of November 7th.

The world shortage of commercial nitrogen for the year 1948-49 was estimated by FAO at 978,000 metric tons, about 108,000 tons greater than last year, but owing to increased production a slight improvement in comparison with requirements over that of last year. World production was estimated at 3,083,000 metric tons, against 2,750,000 metric tons in 1947-48, and requirements of 4,061,000 tons, against 3,620,000 tons.

The current demand for nitrogen is stronger than for any other fertilizer material, it was stated, and even if, as a result of some recession from the present high level of farm prices, the demand were to diminish in a few countries, there would remain an increasing demand to be satisfied in the developing countries. The countries less developed agriculturally are showing a new interest in fertilizers in connection with their food production programs, it was stated.

Europe expects to produce almost 50 per cent more chemical nitrogen for fertilizer in 1948-49 than in 1946-47. In spite of this remarkable increase, resulting primarily from rehabilitation of war-damaged plants, the spread between demand and total supply will be even larger than it was in the earlier year. Requirements have been increasing steadily, although at a much lower rate than production; but the quantities available to Europe from other sources are decreasing as urgent demands of non-European areas also are growing.

In the Americas, total production of nitrogen for fertilizers (including the ordnance types) has increased about 15 per cent in the last two years. Nitrogen requirements and utilization are estimated to have increased about 25 per cent and 8 per cent, respectively, reflecting the desire of farmers to expand production programs. Consumption has been kept down by the system of international allocations, which has made it possible to increase exports by about 31 per cent in 1948-49, compared with 1946-47.

Great supply difficulties have been experienced during the past three years by the

countries of Asia and Africa. Governments in those continents have become aware of the importance of nitrogenous fertilizers for increasing production of food, and requirements have increased steadily. Asia alone, from the point of view of crop needs, could well utilize considerably more than a million tons of fertilizer nitrogen a year. However, problems of currency and transportation, among other difficulties, have restricted consumption much below that level. But, the majority of countries in Asia and Africa depend on imports for meeting their nitrogen requirements, and during the present period of shortage it has been extremely difficult to find exporters willing to ship to those areas.

Ferro Chemical Corporation Issues Cobalt Booklet

A pamphlet entitled "Cobalt Compounds for Correcting Diet Deficiencies in Feeding Cattle and Sheep" has been published by Ferro Chemical Corporation. The booklet covers the symptoms of cobalt deficiency in animals and the functions of this element in animal nutrition.

Recommendations are given for cobalt additions to prepared feeds and concentrates, and also to fertilizers used in growing hay, silage and feed. An addition of two pounds of cobalt sulphate per acre is recommended as an adequate treatment to overcome any cobalt deficiency.

A copy of the pamphlet can be obtained from Ferro Chemical Corporation, Union Commerce Building, Cleveland 14, Ohio.

Thompson Joins Mississippi Chemical Corporation Staff

Mississippi Chemical Corporation, Jackson, Miss., has announced the appointment of H. Leroy Thompson as General Operations Manager.

Mr. Thompson was formerly associated with the Division of Chemical Engineering, Tennessee Valley Authority, as staff chemical engineering consultant and as a project leader in process development. He was responsible for a number of TVA developments and is author of several technical publications. He is past chairman of the Wilson Dam Section, American Chemical Society. Mr. Thompson is a chemical engineering graduate of Alabama Polytechnic Institute and is a native of Greenville, Alabama.

Mississippi Chemical is a proprietary corporation organized and owned by the farmers

of Mississippi. Its immediate purpose is to construct and operate plants that will provide an indigenous supply of nitrogen fertilizers for the state, although it is planned eventually to produce other agricultural chemicals and related by-products. Mr. Thompson will be responsible for the technical development of the project during construction and operation. His affiliation follows several months of closely related work in the organization of the Finklea Chemical Company of Leland, Mississippi, whose interests were acquired by Mississippi Chemical.

Potash Deliveries, Third Quarter

The five major American potash producers delivered 511,819 tons of potash salts containing an equivalent of 271,494 tons K_2O during the third quarter of 1948, an increase of 17 per cent in salts and 16 per cent in K_2O over the same period in 1947, according to the American Potash Institute.

Agricultural deliveries in the United States, Canada, Cuba, Puerto Rico, and Hawaii amounted to 471,269 tons of salts, equivalent to 246,502 tons K_2O , comprised of 352,052 tons of muriate of potash, 64,220 tons of manure salts, and 54,997 tons sulphate of potash and sulphate of potash-magnesia. The chemical industry took 34,570 tons of muriate of potash and sulphate of potash, containing an equivalent of 21,380 tons K_2O . Other exports amounted to 5,979 tons of salts containing 3,612 tons K_2O .

During the first nine months of 1948, total deliveries by United States producers and importers amounted to 1,581,728 tons of potash salts containing 842,934 tons K_2O , an increase of 10 per cent in salts and 9 per cent in K_2O over the corresponding period in 1947. Potash for agricultural use in the United States, Canada, Cuba, Puerto Rico, and Hawaii amounted to 767,021 tons K_2O contained in 1,458,895 tons of salts of which 1,102,495 tons were muriate of potash, 187,912 tons manure salts, and 168,488 tons sulphate of potash and sulphate of potash-magnesia, representing increases of 10 per cent in salts and 9 per cent in K_2O . Deliveries to the chemical industry totaled 106,499 tons of muriate of potash and sulphate of potash, containing an equivalent of 66,045 tons K_2O , increases of 9 per cent in salts and 8 per cent K_2O in comparison to 1947. Other exports amounted to 16,334 tons of salts, containing an equivalent of 9,868 tons K_2O , an increase of 29 per cent in salts and K_2O over the same period in 1947.

Potato Production Goals and Price Support Lowered

The U. S. Department of Agriculture has announced production goals for the 1949 crop of Irish potatoes, together with a support price of 60 per cent of parity.

The new goals represent a substantial cut in acreage. The national figure for 1949 has been set at 1,938,300 acres—about 200,000 less than the planted acreage this year. The 1949 goal includes 1,223,100 acres for commercial production, and 715,200 for non-commercial production (less than 3 acres).

The commercial part of the national goal has been divided into state goals, which will later be broken down into proportionate shares for counties and for individual farms.

In dividing the national goal acreage among the various states, the Department made deductions from the base-period averages of those states, where the acreage in recent years has exceeded the established goals. Many of those additional acres were known to be excessive at the time they were planted, and they were not given equal credit with the "within goal" acreage in working out the state goals for 1949.

Commenting on the goal and price support announcement, Secretary of Agriculture Charles F. Brannan made the following statement:

"I have been extremely reluctant to approve the lowering of the support price for potatoes to 60 per cent of parity. I want it clearly understood that this figure applies to potatoes only, and that it cannot be regarded as a precedent or as the attitude of this Department in establishing the general level of price supports under our new legislation. Controlling excess production by dropping price supports sharply is not a desirable way to get adjustments, no matter how necessary those adjustments may be. However, Con-

gress has given the Department of Agriculture no other effective mechanism, in spite of the fact that its attention has repeatedly been called to the abnormal potato situation.

"Producers will again be required to stay within their individual farm acreage goals in 1949 to be eligible for direct price support, and measures to help stabilize marketing will be included in the potato program. However, experience has shown that these alone are not enough to do the job. Too often the non-cooperator, who over-plants his goal, has profited from general price support action which holds up the potato market. We need legislative provisions which will help the man who adjusts his acreage, while withholding rewards from those who deliberately over-produce.

"I therefore intend to ask Congress to provide legislation by means of which production adjustment may be encouraged and accomplished rather than simply allow for dropping price support from under a specific crop.

"The effort to aid farmers to make adjustments to the patterns of production which are better adapted to our peacetime demands and which will give aggressive encouragement to the best soil practices will be only partially facilitated by moving the level of guaranteed prices up and down. In fact, the use of this device by itself may discourage good conservation activities. It can also operate to penalize the farmers who are in most need of encouragement and assistance in making these adjustments and adopting the appropriate practices.

"Moreover, in my opinion, this is not the time to be talking about reducing the prices of farm products without relating that discussion to the many factors which go into the production of farm commodities. In fact, at this very time, the cost of things which farm-

(Continued on page 24)

FERTILIZER MATERIALS

FAST DEPENDABLE BROKERAGE SERVICE

Your Inquiries Solicited

FRANK R. JACKLE

405 LEXINGTON AVENUE

NEW YORK 17; N. Y.

FERTILIZER MATERIALS MARKET

NEW YORK

Demand for Nitrogen and Potash Still Exceeds Supply. Synthetic Nitrogen Production Behind Schedule. Organics in Greater Demand from Feed Trade and Prices Advance. Superphosphate Production Caught Up with Demand in Some Sections

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, November 10, 1948.

Sulphate of Ammonia

Shipments were proceeding along on a regular schedule and the production was good at most production points but producers were not able to offer any additional in spite of the increasing demand from the fertilizer trade.

Nitrate of Soda

Deliveries are being made by the importers upon arrival of boats at various ports but the demand remains heavy. Most buyers are trying to stock up against the expected heavy spring demand.

Nitrogen Solutions

Manufacturers are having difficulty in getting their full requirements. There is a shortage in most sections and little immediate relief is looked for.

Ammonium Nitrate

Production is still behind at some plants, due to various causes, and buyers are eagerly seeking supplies wherever available. The production at the Canadian plant is reported restricted.

Castor Pomace

Producers seem to feel their production will decrease and that supplies will be limited. Most buyers have contracted whenever the material becomes available.

Organics

Blood was in heavy demand from feed buyers and offerings were impossible to locate for prompt shipment. Last sales were made at \$8.50 (\$10.33 per unit N) and it was thought the market might reach \$9.00 (\$10.94 per unit N) per unit shortly, which was too high for fertilizer buyers. Animal tankage last sold at \$8.50 (\$10.33 per unit N) with more wanted at that price. Offerings were

scarce in all sections. All vegetable meals advanced, with buying particularly good for immediate shipment. Linseed meal advanced about \$3.00 per ton to \$65.00 per ton, f.o.b. Minneapolis, and soybean meal sold at \$56.00 per ton, f.o.b. Decatur, Ill., with cottonseed offered at \$71.00, Memphis, Tenn. Fertilizer buyers did some buying on the advance but were being rather conservative in their attitude toward the rising market.

Fish Meal

Sales of fish meal were made to the feed trade at \$130. to \$132. per ton, f.o.b. fish factories, with fertilizer buyers showing little interest. While there was some fishing in progress along the lower Atlantic coast, operations around Chesapeake Bay had ceased for this season. No imported material was reported available.

Bone Meal

Producers are entirely sold out for nearby shipment and this material is very difficult to buy. Feeding bone meal has been in heavy demand and is also sold up. It is hoped the situation may ease up after January 1st.

Hoof Meal

Sales made at \$7.25 (\$8.82 per unit N), f.o.b. western shipping points with little material being offered. Demand continues good from certain sections.

Superphosphate

It is reported in some sections that stocks of this material in the hands of the producers are increasing, due to the heavy production. No price changes have been reported.

Potash

Some muriate of potash was reported available from French sources but it is believed the material has all been sold. Demand continued heavy.

PHILADELPHIA

Greater Movement of Raw Materials but Supply Still Lags Behind Demand. Foreign Potash Offerings Expected

Exclusive Correspondence to "The American Fertilizer"

PHILADELPHIA, November 8, 1948.

Raw materials are moving to the mixers with greater freedom and improvement is noted in orders from the farmers. Materials prices are considerably higher than last season and they are in short supply. It is expected that Canadian cyanamid producers will deliver about 65 per cent of the actual tonnage booked earlier in the year.

Sulphate of Ammonia.—Production is below last year and almost entirely under contract. The supply is far behind requirements, and resale material is practically unobtainable.

Nitrate of Soda.—Market is very firm with stocks in scant supply. While the production in Chile and our imports from there are ahead of last year, buying conditions continue exceedingly tight.

Ammonium Nitrate.—Prices have been advanced and now range from \$55.00 to \$58.00 at producing plants. Demand is much in excess of the supply.

Castor Pomace.—No change reported and no current offerings.

Blood, Tankage, Bone.—Blood is quoted higher at about \$8.50 per unit of ammonia (\$10.33 per unit N), due principally to restricted production. Tankage is likewise a little stronger at \$7.50 to \$8.00 per unit of ammonia (\$9.12 to \$9.72 per unit N). Demand has been principally from the feeding trade. Bone production is all under contract and scarce in supply. Demand is very strong.

Fish Scrap.—Supply is quite limited, with scrap quoted at \$120.00 to \$122.00. Menhaden meal, 60 per cent protein, is quoted at \$127.00, with 65 per cent at \$132.00.

Phosphate Rock.—Shipments continue against contracts with production capacity now ample to meet domestic requirements. No price changes are noted nor expected.

Superphosphate.—Market for normal is firm at 76 cents to 77 cents per unit A.P.A. and shipments to mixers are moving out much more freely.

Potash.—Shipments of domestic production continue practically per schedule, but the supply is not equal to the demand. It is reported that a substantial tonnage of muriate will come into this country from France, spread over the period from now to June 30, 1949. Russian interests are said to be offering muriate, probably of German origin, at a price far above what the French will cost.

CHARLESTON

Nitrogen Supplies Still Short and May Affect Mixed Fertilizer Tonnage. Superphosphate Supply Situation Easier

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, November 8, 1948.

The shortage of mineral nitrogen in all forms continues the prime worry of fertilizer manufacturers. Nitrogen is still the yardstick governing the quantity of mixed fertilizers that will be produced this season. Potash continues short of demand with superphosphate maintaining its easy position.

Organics.—Organics continue in quiet demand. Domestic nitrogenous is offered at \$3.50 to \$4.00 per unit of ammonia f.o.b. works, depending on the location of the production point. South American organics remain at levels higher than domestic prices.

Castor Pomace.—Movement is primarily against current contracts and little activity is shown in new business. The market is nom-

ESTABLISHED 1873

Woodward & Dickerson
Inc.

FERTILIZER AND FEED MATERIALS

BROKERS
COMMISSION MERCHANTS

GIRARD TRUST BUILDING

Cable Address: "WOODWARD"

IMPORTERS
EXPORTERS

PHILADELPHIA 2, PA., U. S. A.

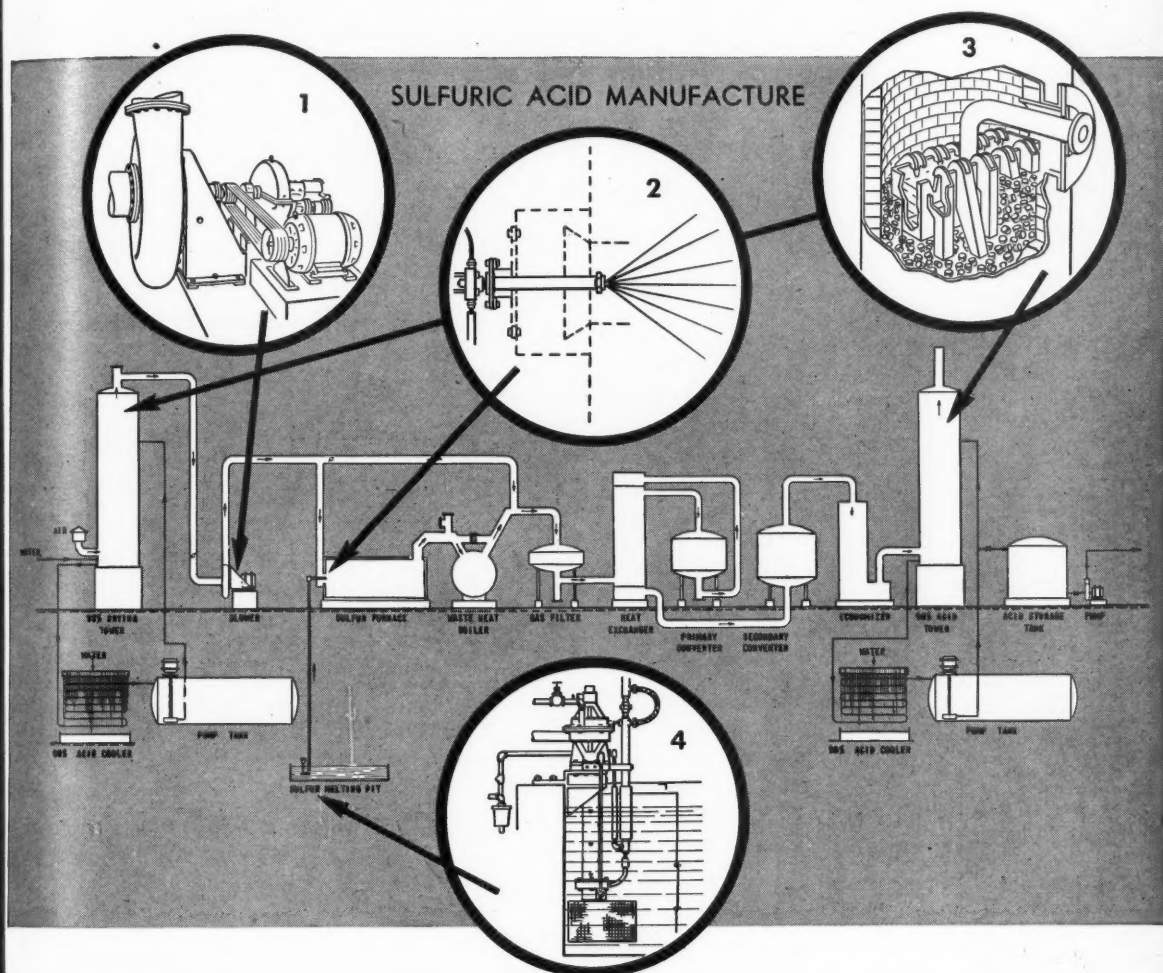
Codes used: Acme, Bentley's Complete, Appendix, Private

Chem
unusu
which
a' Ch
Plant,
import
1. El
main
waste
opera

Chemico Design Features

... that increase operating efficiency in a

CONTACT ACID PLANT



Chemico-designed plants have many unusual features of original design which add to operating efficiency. In a Chemico Contact Sulfuric Acid Plant, for instance, you will find these important improvements:

1. Electric motor starting for main blower until steam from waste heat boiler is available to operate the steam turbine.

2. Sulfur gun that sprays liquid sulfur into the furnace under controlled conditions to produce uniform strength SO_2 gas without sublimation.

3. Highly efficient distributors that assure effective contact of acid and gas without carry-over of acid mist.

4. Steam turbine driven submerged sulfur pump that delivers a steady supply of liquid sulfur to the burner.

Properly designed equipment combined with the right process is your assurance of trouble-free operation and maximum production in a Chemico-built acid plant.



*Chemico Plants
are profitable
investments*

CHEMICAL CONSTRUCTION CORPORATION

EMPIRE STATE BLDG., 350 FIFTH AVENUE, NEW YORK 1, N. Y.

EUROPEAN TECHNICAL REPRESENTATIVE

CYANAMID PRODUCTS, LTD., BRETTENHAM HOUSE, LANCASTER PLACE, LONDON W. C. 3, ENGLAND

CABLES: CHEMICONST, NEW YORK



ST. REGIS

Introduces the

**USE IT
AND SAVE**

HERE'S a flat tube sewn valve bag—an ideal package—that has proved its worth for the fertilizer industry . . . and its cost is lower!

The tube width is the same. Eliminating the gussets results in a shorter length and saves paper . . . eliminating the LC sleeve makes an additional saving. An extended valve prevents leakage.

This new flat tube bag fills well on a St. Regis Packer, producing a compact, rectangular package—easy to handle . . . easy to stack. Plus room for ample brand display.

Our Field Engineering Department will gladly work out with you the specifications for the new bag. We will work with your packer operators while they fill your first shipment of flat tube bags. Once a man gets the hang of changing to the flat tube sewn valve bag, his speed may even increase over the old method.



ST. REGIS

PO



FLAT TUBE SEWN VALVE BAG

With expanding facilities for producing this new multiwall bag, St. Regis now offers the flat tube sewn valve bag in the quantities you want. A trial shipment will prove its worth, and its economy, to you.

SALES SUBSIDIARY OF  ST. REGIS PAPER COMPANY

ST. REGIS SALES CORPORATION

NEW YORK • CHICAGO • BALTIMORE • SAN FRANCISCO • ALLENTOWN • OFFICES IN PRINCIPAL CITIES
IN CANADA: ST. REGIS PAPER COMPANY (CAN.) LTD., MONTREAL • HAMILTON • VANCOUVER

ST. REGIS—WORLD'S LARGEST MANUFACTURER OF MULTIWALL PAPER BAGS



BETTER
PACKAGING
at Lower Cost

Packaging Systems

inally \$27.50 to \$30.00 per ton in bags, f.o.b. northeastern shipping points.

Dried Ground Blood.—The market at Chicago is around \$8.25 to \$8.50 per unit of ammonia (\$10.02 to \$10.33 per unit N), in bulk, with the New York market at approximately the same. Offers are rather scarce.

Fish Scrap and Fish Meal.—Recent sales of 60 per cent protein menhaden meal have been made at around \$127.00 per ton, and 65 per cent grade at \$132.00 in the Baltimore area. Fish scrap has been offered recently at \$120.00. No sales are reported.

Cyanamid.—Shipments continue behind schedule in spite of slightly increased production. Production has been hampered by insufficient electric power at production points.

Potash.—Movement is fairly well on schedule on contract business. The French muriate that is to be delivered in Norfolk and Savannah between November and May is reported offered at 95 cents per unit at these ports, and approximately 20,000 tons is involved. Potash continues in stronger demand than supply can take care of.

Phosphate Rock.—Current demand from acidulators remain fairly steady and production at the mines is keeping pace with this demand. The market may be described as in easy position though prices are steady.

Superphosphate.—The market is firmer than in recent months, due to increased demand from smaller mixers who are beginning their season's operations. Inquiry from the government has also tended to make the market firmer. Stocks continue plentiful.

Sulphate of Ammonia.—Demand continues in excess of supply and practically all producers are under contract for their entire output. Most producers' contract price is \$45.00 per ton in bulk, f.o.b. the ovens.

Ammonium Nitrate.—Effective November 1st, domestic ammonium nitrate ranges in price from \$56.50 to \$58.00 per ton in paper bags, f.o.b. production point, depending on the producer. The market is definitely tight due to the demand, which is far in excess of supply.

Nitrogen Solutions.—Effective November 1st, some producers increased the price and others made no change in price. The main worry, however, is the amount that will be available to fertilizer manufacturers. It is extremely short in relation to the demand at present.

CHICAGO

Feed Organics Demand Continues Strong for Spot Materials. More Vegetable Meals Expected Later

Exclusive Correspondence to "The American Fertilizer"

CHICAGO, November 8, 1948.

Contrary to all expectations, the market on animal proteins appears to be holding up very well, although buyers are confining their interest to nearby material and refuse to take a long range position as it is still expected that the visible large supply of vegetable proteins may have a depressing influence on the market later on. Supplies of bone meal available for prompt shipment were exceedingly scarce.

Meat scraps range in value from \$105 to \$110 per ton, sacked, and digester tankage, 60 per cent protein, ranges from \$115 to \$120 per ton, depending upon location. Dry rendered tankage remains firm at \$1.85 per unit of protein. Wet rendered tankage and dried blood are quoted at \$8.25 to \$8.50 per unit of ammonia (\$10.02 to \$10.33 per unit N). Steamed tone meal, 65 per cent B.P.L., is quoted at \$65 to \$70 per ton, and raw bone meal around \$65 per ton.

THE DAVIDSON COMMISSION CO. — BROKERS —

TALLOW—GREASES—STEARINES

FERTILIZER AND ANIMAL FEED MATERIALS

VEGETABLE OILS—ANIMAL OILS

FATTY ACIDS—FISH OIL AND FISH MEAL

ANIMAL GLANDS AND GLANDULAR DERIVATIVES

UTILITIES BUILDING—327 SOUTH LA SALLE STREET

CHICAGO 4, ILL.

Telephone
WABASH 2604

Codes Used
*ROBINSON
CROSS
KELLY-YOPP
TELETYPE CGO 1051



Trona Muriate of Potash

Potash, one of the important ingredients of mixed fertilizer, is a vital soil nutrient which aids crop production and helps resist plant diseases. To provide the maximum of this important plant food, we are operating full capacity at Trona, 24 hours a day.

Three Elephant Borax

Agricultural authorities have shown that a lack of Boron in the soil can result in deficiency diseases which seriously impair the yield and quality of crops. When Boron deficiencies are found, follow the recommendations of your local County Agent or State Experimental Stations.



AMERICAN POTASH & CHEMICAL CORPORATION

122 EAST 42nd STREET

• • •

NEW YORK 17, N. Y.

231 S. LA SALLE STREET
CHICAGO 4, ILLINOIS

214 WALTON BUILDING
ATLANTA 3, GEORGIA

3030 WEST SIXTH STREET
LOS ANGELES 34, CALIF.

"Pioneer Producers of Muriate in America"

September Superphosphate Production Drops

Production of all grades of superphosphate (calculated on basis of 18 per cent A.P.A.) totaled 801,926 tons, a drop of 5 per cent from the August output of 839,890 tons.

The production and disposition of normal superphosphate fertilizer in September were slightly below reported figures for August, according to the Bureau of the Census, Department of Commerce. September production was 6 per cent below August and 8 per cent below September 1947. Shipments were about 11 per cent under last month and 9 per cent below a year ago. Material used in the reporting plants was 2 per cent above the August figures but was 5 per cent less than September 1947. Stocks on hand remained about the same compared with August and were 78 per cent higher than the corresponding time last year.

Production and shipments of concentrated superphosphate increased about 7 per cent above last month and were about 50 per cent above a year ago. Total supply remained high and materials used in the reporting plants were 3 per cent below August but were

still almost double the amount used in September of 1947.

Production of wet-base goods fell off 14 per cent from the August output and 32 per cent below the September 1947 figure. However, shipments were 30 per cent above last month and 57 per cent above a year ago. Stocks on hand increased 22 per cent above August but were still 29 per cent below a year ago.

	Normal 18% A. P. A. Tons	Concen- trated 45% A. P. A. Tons	Base Goods 18% A. P. A. Tons
Production			
Sept., 1948.....	685,636	44,924	3,980
Aug., 1948.....	730,012	42,094	4,643
Sept., 1947.....	741,797	29,911	5,873
Shipments and used in producing plants			
Sept., 1948.....	725,535	40,812	2,089
Aug., 1948.....	763,106	38,205	1,465
Sept., 1947.....	779,396	27,766	1,317
Stocks on hand			
Sept. 30, 1948....	1,213,040	73,405	10,090
Aug. 31, 1948....	1,236,542	69,635	8,291
Sept. 30, 1947....	681,687	62,584	14,156

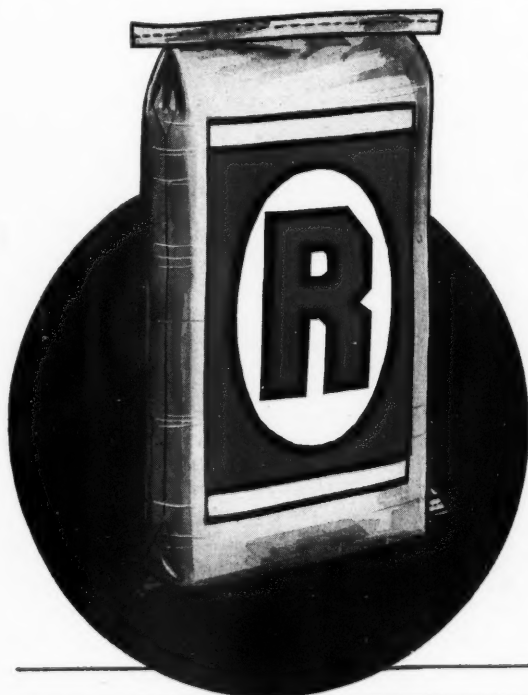


Mixed Fertilizers • Sulphuric Acid • Cleansers
 Superphosphates • Phosphorus • Burlap and Cotton Bags
 Triple Superphosphate • Phosphoric Acids • Vicara Textile Fibers
 Phosphate Rock • Calcium and Sodium Phosphates • Zycon Fiber
 "Black Leaf" Products — Pesticides

VIRGINIA-CAROLINA CHEMICAL CORPORATION Home Office: Richmond, Va.



**Yes sir, Nov. 25 is going to be a bad day
for Mr. Turkey, but a good day for you—
a good old-fashioned Thanksgiving Day**



We, the folks at the Raymond Bag Company, take this opportunity to extend to you and our many friends our sincere hopes that this Thanksgiving will be one filled with happy rejoicing.

If you are a producer, packer, or shipper of Fertilizer and you are not using RAYMOND MULTI-WALL PAPER SHIPPING SACKS investigate them today. See why the fertilizer industry prefers Custom Built QUALITY Raymond Shipping Sacks.

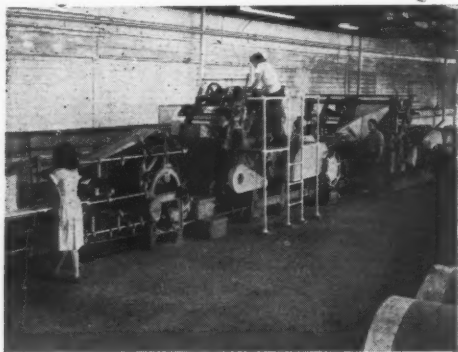
THE RAYMOND BAG COMPANY
MIDDLETOWN, OHIO

RAYMOND
MULTI-WALL PAPER SHIPPING SACKS

Hammond Installs Complete Bag Making Machine

To meet the increased demands for multi-wall bags, Hammond Bag and Paper Co. of Wellsburg, W. Virginia, and Pine Bluff, Arkansas, has installed a new Weber 11-A Automatic complete bag making machine.

The new machine is said to be the largest machine of its kind ever built, having a maximum bag making range of 15½ in. face X 15 in. gusset X 64 in. tube length. It will make bags up to four plies, having combined basis weights up to 200 lbs.



The machine is specially designed for making Multiwall bags for packing Rock Wool Batts, which have heretofore been packed in expensive cartons, and will also make bags suitable for packing Rock Wool and other insulating materials, chemicals, potatoes, and any product ordinarily packed in large, pasted, open-mouth bags. It is ideal for making containers for sugar, salt, flour, etc.

CLASSIFIED ADVERTISEMENTS

OPPORTUNITIES in many communities for the Purina Franchise—Purina Chows for livestock and poultry, Sanitation Products, Farm Supplies under Checkerboard label, rural America's best known trademark. Find out what being a Purina Dealer can mean to you. Dealership areas now open. No obligation. Write Dept. C., Ralston Purina Co., 2507 Checkerboard Square, St. Louis 2, Mo.

This new machine represents a total investment of approximately \$75,000 for Hammond, and will provide the company with the finest equipment of its kind, to help meet the demands of the industries they serve.

H. P. Smith Now Mathieson Assistant General Sales Manager

Harry P. Smith, formerly New York District Sales Manager of Mathieson Chemical Corporation, has been made Assistant General Manager of Sales, it is announced by E. E. Routh, Vice-President and Director of Sales. His headquarters will remain in the company's New York offices.

A native New Yorker, Mr. Smith graduated from Columbia with a B.S. degree in 1921. Prior to joining the Mathieson sales department in 1944, he was President of the George Chemical Company, now a division of Diamond Alkali Company. He is a member of the Chemical Salesmen's Association of New York and Alkali Distributors of the New York Metropolitan Area.

Potato Production Goal

(Continued from page 14)

ers must buy to carry on their production are higher than they were a year ago, notwithstanding the fact that the prices they receive for their products are generally lower.

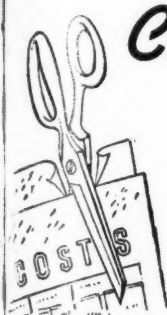
"If there had been any other mechanism to attain the sharp adjustment in potato production which is long overdue, I most certainly would also have used it.

"In view of the high losses incurred in the potato program, however, I am forced to drop the support price to 60 per cent of parity—the maximum reduction allowed under existing legislation. Losses sustained by the Department of Agriculture under the potato program for the 1948 crop alone will probably equal or exceed the entire monetary gains which have accrued to the Commodity Credit Corporation during the 15 years of its general support and procurement operations."

The major provisions of the 1949 potato program are: (1) the crop will be supported

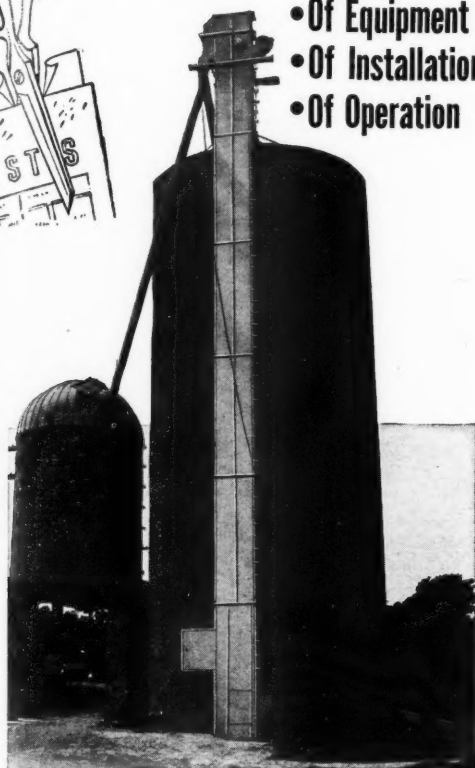
Stedman	FERTILIZER PLANT EQUIPMENT			
	Dependable for Fifty Years	All-Steel Self-Contained Fertilizer Mixing Units	Batch Mixers— Dry Batching Pan Mixers— Wet Mixing	Swing Hammer and Cage Type Tailings Pulverizers
Founded 1834				Vibrating Screens Dust Weigh Hoppers Acid Weigh Scales

STEDMAN'S FOUNDRY & MACHINE WORKS 505 Indiana Ave. AURORA, INDIANA, U.S.A.



Cut COSTS

- Of Equipment
- Of Installations
- Of Operation



BAUGHMAN Belt and Bucket Elevator

YOURS FOR A FRACTION OF THE USUAL COST! Production line manufacture of standard 10' sections eliminates the expense of custom-built installations.

Gives peak efficiency in handling fertilizer. Easily set up or moved. Self-supporting and compact—only 7 sq. ft. at base. Heights from 20' to 80'. Capacity up to 90 tons per hour. Ruggedly built throughout.

BAUGHMAN CONVEYORS



OPEN TROUGH BELT CONVEYOR. Portable, well-balanced . . . capacity up to 60 tons per hour. Direct line shaft drive. Ruggedly built.



ALL-ENCLOSED SCREW CONVEYOR. Large capacity portable. Conveys from horizontal to 60°. Perfect for fertilizers. Built for service.

WRITE FOR FULL INFORMATION

BAUGHMAN MANUFACTURING CO., Inc.
1211 Shipman Road, Jerseyville, Ill.

"There is a Baughman Distributor Near You"

Keyed SERVICE!

Fertilizer plants all over the country—large and small—state their needs and we meet them. Large stocks of seasoned materials and ample modern production facilities enable us to make prompt shipments.

TRIPLE SUPERPHOSPHATE

46 to 48% Available Phosphoric Acid

We also manufacture
HIGH-GRADE SUPERPHOSPHATE

U. S. Phosphoric Products

Division
TENNESSEE CORPORATION
Tampa, Florida

New York Office:
61 Broadway
Washington, D. C.
440 The Woodward Bldg.

Sales Agents:
Bradley & Baker
155 East 44th St.
New York, N. Y.



A Mark of

Reliability

KENT MILL COMPANY

60 BOWNE ST., BROOKLYN 31, N. Y.

**CRUSHING, GRINDING, PULVERIZING,
AND AIR SEPARATING MACHINERY.**

FOR

**LIMESTONE, GYPSUM, BARYTES, PHOSPHATE
ROCK AND OTHER MATERIALS**

**TRIPLE & SUPER
PHOSPHATE
PHOSPHORIC ACID**

**PLANTS
& DESIGNS**



**NICOLAY TITLESTAD
CORPORATION**
11 West 42nd Street
New York 18, N. Y.

at 60 per cent of parity, the minimum level under the "60 to 90 per cent" range provided in the applicable legislation; (2) to be eligible for price support operations, individual growers must stay within the acreage goals established for each farm; and (3) participating growers will, to the extent practicable, market their potatoes under the provisions of marketing agreements, in order to help stabilize marketing, keep lower grades out of commercial channels, and assure consumers the better quality potatoes.

Department officials estimate that the announced acreage goal for 1949 should result in production of approximately 350 million bushels of potatoes, which would be adequate for all anticipated requirements.

Planted acreage in 1948 is estimated at 2,137,700. Even though this was considerably less than the established 1948 goal of 2,352,000 acres, total United States production for the year is now expected to be around 431,000,000 bushels. This has resulted from yields which were from 40 to 50 bushels more per acre than those calculated (on the basis of past averages) at the time the goals were set. As against this high production, only about 350,000,000 bushels are expected to move through normal channels during the marketing year—the same as the goal now established for 1949 crop potatoes.

The difference between this year's production and the "disappearance" through normal outlets represents roughly the volume which the Department of Agriculture is obligated to handle in its diversion operations, to carry out the mandatory price support program. Up to November 1, more than 56,000,000 bushels had been diverted from normal marketing channels. The total for the entire marketing year will inevitably be considerably larger. In accordance with provisions of the Agricultural Act of 1948, all potatoes harvested during 1948 must be supported at 90 per cent of parity until they are marketed, even though this is well into 1949.

Cost to the Government of price support per unit of potatoes has been higher this year than in either 1946 or 1947. For one thing, the parity price itself has gone up as the prices of things the farmer buys have gone up.

Ninety per cent of parity for the 1948 potato crop has been more than 70 cents a hundred-weight, for instance, than it was for the 1946 crop. Further, handling and diversion costs have also increased.

One fact pointed out in connection with potato programs is the trend toward lower consumption. Per capita annual consumption of potatoes in the United States, which was as high as 150 pounds immediately after World War I, and had dropped to 127 pounds by 1946, is now running at about 118 pounds.

With reference to the decision to set the 1949 potato price support at 60 per cent of parity, Department officials say that a great majority of producer representatives have recommended this low support figure, recognizing that such a positive measure was needed in the absence of other, adequate tools to deal with the problem.

HARDENING PLANTS WITH POTASH

(Continued from page 29)

ing of muriate of potash to his cabbage plants to "harden" them. In order to get a more prompt response, since time was an essential factor, he was advised to apply the potash in solution. Since he was equipped with a large mounted tank with tubes to apply calomel solution to his cabbage plant rows to control cabbage maggot, it was suggested that he use this equipment to apply the muriate of potash in solution directly on his cabbage rows. This was applied at the rate of 10 lbs. of 60 per cent muriate of potash per 50 gallons of water, using 750 gallons per acre.

The result was that very satisfactory plants were produced by this treatment. A few rows were left as an untreated check for comparison. The cabbage plants receiving the potash sidedressing made a stockier growth with firm stiff stems that stood transplanting well, whereas the untreated plants made such a rank soft growth they were discarded.

Similarly, plants in the field, if they are making too soft and rank a vegetative growth, can be hardened by applying potash fertilizer. If too much potash is applied an apparent nitrogen deficiency may occur.

SOUTHERN LEAD BURNING COMPANY

SULPHURIC ACID CHAMBER PLANTS—Box Type or Water Cooled
LEAD ACID SYSTEMS FOR ACIDULATING PLANTS
GLOVER OR GAY LUSSAC TOWERS, ACID COOLERS, etc.
LEAD BURNERS FURNISHED FOR REPAIR WORK

P. O. BOX 4627, ATLANTA 2, GEORGIA

Phone: WALNUT 2576



SAID THE MOUNTAINEER

Remember the mountaineer who had six cats? He cut six holes in the cabin door... explained: "When I say 'scat' I mean 'scat'." It saved a lot of time when he wanted quick action.

When you need Multiwall Paper Shipping Sacks, you usually want "scat" action, too. Although immediate shipments aren't always possible under present limited supply of quality paper for first class Multiwalls, you're still way ahead in time saved by having a source that can supply you from six plants.

Confer now with your Bemis sales office so that your order can be fitted into our production schedule sooner to meet the shipping date you need.



Wilmington, Calif.



Mobile, Ala.



Peoria, Ill.



St. Helens, Ore.



East Pepperell, Mass.



San Francisco, Calif.

BEMIS BRO. BAG CO.





Multiwall users call him

THE BEMIS QUIZ KID

**When it's a question
on packaging,
he has the answer**

The Bemis Packaging Specialist has many tough questions fired at him, but he comes back with the answers like a quiz kid.

For instance, variations of such questions as: How to get better closures, what is the best type of package for a particular job, how to save money in shipping, how to store and care for paper bags—these he takes in his stride. If necessary he comes right into your plant to seek out the answer.

This is a part of Bemis Packaging Service. It is available to all plants without obligation. Make use of it. Hundreds of companies save money right along because they've talked with the Bemis Packaging Specialist.

The brown kraft paper on which this is printed is actual stock used in BEMIS MULTIWALL PAPER SHIPPING SACKS. Note the toughness... the strength. Made of three or more plies of this paper, Bemis Multiwalls naturally are extra sturdy... provide the protection you want for your products.



BEMIS BRO. BAG CO.

PEORIA, ILL. • EAST FIPPERSHILL, MASS. • MOBILE, ALA. • SAN FRANCISCO, CALIF. • ST. HELENS, ORE. • WILMINGTON, CALIF.

Baltimore • Boise • Boston • Brooklyn • Buffalo
Charlotte • Chicago • Denver • Detroit
Houston • Indianapolis • Jacksonville, Fla.
Kansas City • Los Angeles • Louisville • Memphis



Minneapolis • New Orleans • New York City
Norfolk • Oklahoma City • Omaha
Orlando • Phoenix • Pittsburgh • St. Louis
Salem • Salt Lake City • Seattle • Wichita

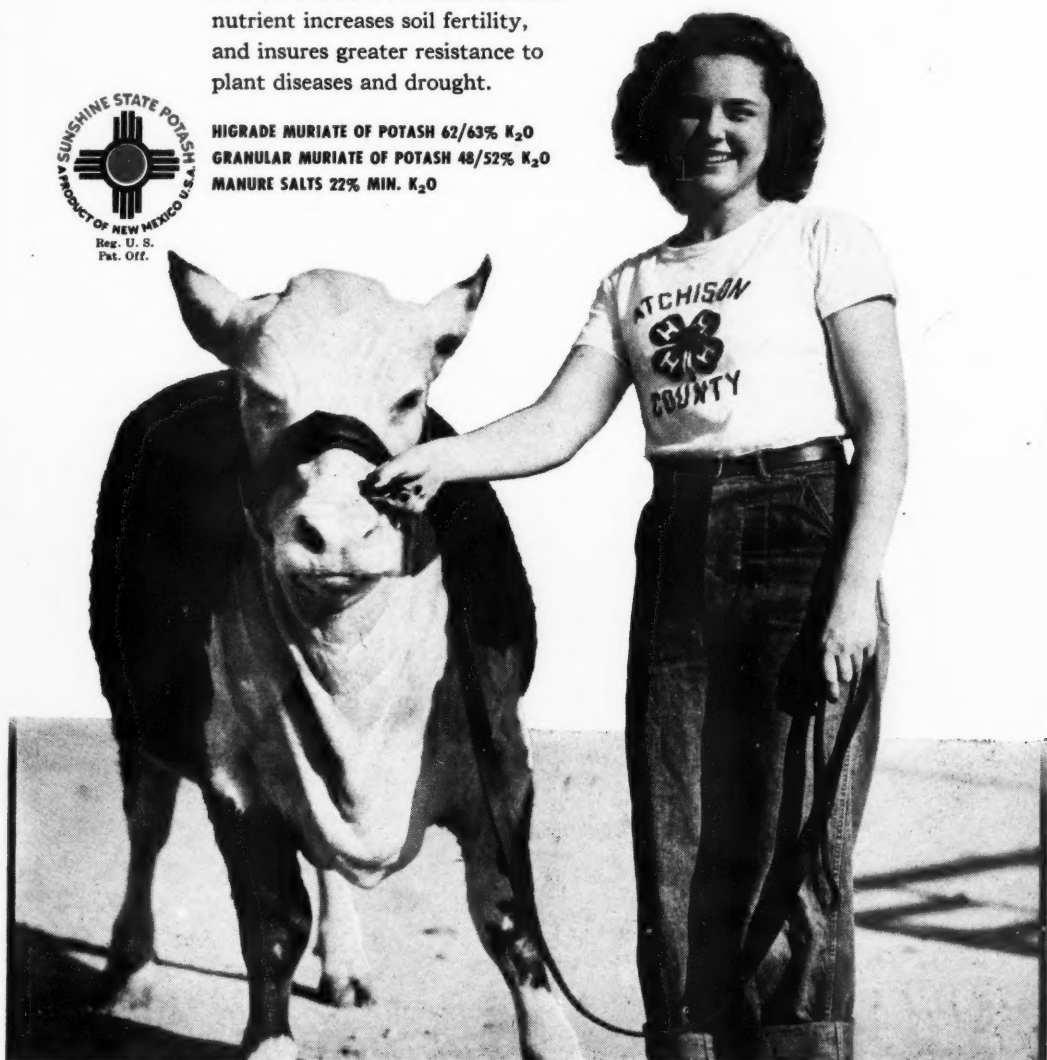
A GOOD WAY OF LIFE!

And life on the farm is growing more rewarding with every year. Better farm machinery . . . better strains of live stock . . . better types of grains, and fruits, and vegetables . . . better fertilizers, more exactly suited to each particular need.

Many of these fertilizers are compounded with Sunshine State Potash, a product of New Mexico. For this vital soil nutrient increases soil fertility, and insures greater resistance to plant diseases and drought.



HIGRADE MURIATE OF POTASH 62/63% K_2O
GRANULAR MURIATE OF POTASH 48/52% K_2O
MANURE SALTS 22% MIN. K_2O



UNITED STATES POTASH COMPANY, Incorporated, 30 Rockefeller Plaza, New York 20, N. Y.

SOME RATES OF FERTILITY DECLINE

(Continued from page 8)

trees are annual bearers? When older cows become "shy breeders" can the decreasing soil fertility under their feed crops possibly be the indirect factors in the case?

Quite contrary to expectations and common claims for rotations in the upkeep of soil fertility, the crops in even the 6-year rotation are now down to failure on the plot given no treatment. This is true although corn, oats, and wheat are only three tilled crops out of six in the rotation, and each has been grown now only 10 times since the soil was put under cultivation. The clover has been failing for a quarter of a century. The timothy occupying the land for two years in the rotation has been little more than tickle grass. Rotation with no more help from the clover and sod during three years of the six was little or no different than the continuous wheat in the rate of decline of the soil fertility. Without soil treatments of manure, lime and other fertilizers, and regardless of whether continuous sod, continuous tilled cropping, or any length of rotation going as long as six years, the supply of fertility on Sanborn Field is approaching exhaustion in nearly half a century.

Task of Future Restoration

Reproduction by the plant from seed is not a matter of only the starch in it, except as this is reserve energy for the germ that is rich in protein and many other compounds. For the synthesis of these complex components representing potential reproduction, the fertility of the soil, more than the weather, is demanded. Troubles in reproduction in plants and animals are the reflection of the declining fertility supply in the soil. Shrinking lifetimes of our fields are the underlying causes of much that has not yet been traced to this as the cause. Better reproduction can come

only as we minister to the soil, which is the source of the entire process of creation. If creation of food as plants and animals is to continue abundantly in the future, we can scarcely guarantee its projection there without being guided by the records of the past concerning the rates of decline of the soil fertility.

SIDEDRESSING SWEET CORN

(Continued from page 11)

The nitrogen in the sidedressing of 37½ pounds per acre of actual nitrogen, which proved most economical under the conditions of the 1947 experiments at Geneva, was supplied by approximately 230 pounds of nitrate of soda, 180 pounds of sulphate of ammonia, or 112 pounds of ammonium nitrate.

Large Ears Obtained

The yield response to the sidedressed nitrogen is evident from the data in the table. The sidedressing treatments did not affect the number of ears harvested per plot. Therefore, the increased yield was due to larger ears in the sidedressed plots. Under the conditions of this experiment, when 40 pounds of nitrogen per acre were applied before planting, a sidedressing of 37½ pounds of nitrogen was the most economical. With ammonium nitrate costing \$69.00 a ton in 1947, the increase in yield of 0.91 ton of sweet corn was obtained at a cost of \$4.00 for the fertilizer.

The 1947 results indicate that nitrogen starvation in sweet corn can be corrected by sidedressing with appropriate nitrogen fertilizer provided (1) that the sidedressing is applied at the proper time—usually at the time of the last cultivation—and (2) that adequate rainfall occurs following sidedressing to move the nitrogen down into the soil where it will be available to the plant roots. Of course, if nitrogen is not a limiting factor in the growth of the crop, no response to supplemental nitrogen can be expected.



*Making Good Bags
Since 1870*

**FULTON
QUALITY**

TEXTILE BAGS • WATERPROOF PAPER LINED BAGS

Fulton Bag & Cotton Mills

Manufacturers Since 1870

ATLANTA ST. LOUIS DALLAS MINNEAPOLIS
NEW YORK NEW ORLEANS DENVER KANSAS CITY, KAN.

THE BRADLEY HERCULES MILLS AND GRIFFIN MILLS

For Fine or Semi-Fine Grinding of
PHOSPHATE ROCKS and LIMESTONE

Capacities 1 to 50 Tons Per Hour
Catalogs Mailed on Request

BRADLEY PULVERIZER COMPANY
Allentown, Penna.

ALEX. M. McIVER

Established 1915

H. H. McIVER

ALEX. M. McIVER & SON

BROKERS

SPECIALIZING

- Sulphuric Acid
- Nitrogenous Materials
- Blood and Fertilizer Tankage
- Phosphate Rock
- Bone Meals
- Oil Mill Products
- High Testing Dolomitic Lime
- "Riceland" Ground Rice Hulls
- Ammoniated Base and Superphosphate

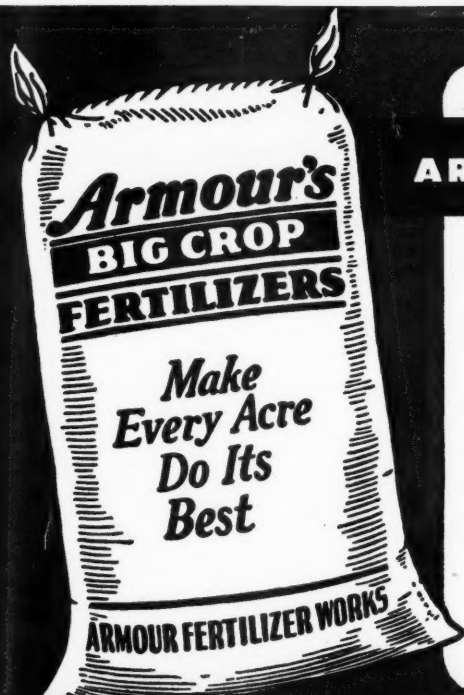
Representatives Virginia Carolina Chemical Corporation Bag Department
 Burlap Bags Cotton Bags

SOUTH AMERICAN FERTILIZER MATERIALS

Peoples Office Building

Phones: Local 2-4627—L. D. 921-922

Charleston, S. C.



ARMOUR FERTILIZER WORKS

General offices:

**HURT BUILDING
 ATLANTA, GA.**

MAILING ADDRESS: P.O. BOX 1685, ATLANTA 1, Ga.

Division offices:

Birmingham, Ala.
 Montgomery, Ala.
 Jacksonville, Fla.
 Albany, Ga.
 Atlanta, Ga.
 Augusta, Ga.
 Columbus, Ga.
 Chicago Heights, Ill.
 East St. Louis, Ill.
 New Orleans, La.
 Presque Isle, Me.

Baltimore, Md.
 New York, N. Y.
 Greensboro, N. C.
 Wilmington, N. C.
 Cincinnati, Ohio
 Sandusky, Ohio
 Columbia, S. C.
 Nashville, Tenn.
 Houston, Tex.
 Norfolk, Va.
 Havana, Cuba

San Juan, Puerto Rico

Your Brand

ATTRACTIVELY PRINTED ON
HAMMOND MULTI-WALL BAGS

GIVES YOUR PRODUCT THAT
"QUALITY LOOK"
 THAT CREATES SALES AND
 ASSURES STEADY REPEAT BUSINESS



Hammond designed and printed brands, in keeping with modern advertising trends, help build customer acceptance of your products and prestige for your company. Skilled engravers and experienced pressmen reproduce your brand in brilliant colors on high speed precision presses. Call your nearest Hammond man today for complete data.

HAMMOND BAG & PAPER CO.
 General Offices—WELLSBURG, W. VA.
 Factories at WELLSBURG, W. VA. and PINE BLUFF, ARK.

Representatives in the Following Cities

CHICAGO, ILLINOIS	MINNEAPOLIS, MINNESOTA	BUFFALO, NEW YORK
BLUEFIELD, VIRGINIA	PHILADELPHIA, PENNSYLVANIA	COLUMBUS, OHIO
CHARLOTTE, NORTH CAROLINA	LIGONIER, PENNSYLVANIA	HOUSTON, TEXAS
	ADRIAN, MICHIGAN	

Ashcraft-Wilkinson Co.

**Fertilizer
Materials**



**Feeding
Materials**

ALL FERTILIZER MATERIALS

FOREIGN AND DOMESTIC

Ammonium Nitrate Sulphate of Ammonia
Organic Ammoniates Sulphur

Exclusive Distributors: DUVAL TEXAS SULPHUR

Vegetable Oil Meals and Feedstuffs

HOME OFFICE: ATLANTA, GA.

BRANCHES:
 NORFOLK, VA.
 CHARLESTON, S. C.
 JACKSON, MISS.
 TAMPA, FLA.

CABLE ADDRESS:
 ASHCRAFT

SUBSIDIARIES:
 INTERSTATE MILLS, INC.
 CAIRO, ILL.
 INTERSTATE WAREHOUSE
 MOUNDS, ILL.

BUYERS' GUIDE • A CLASSIFIED INDEX TO ALL THE ADVERTISERS IN "THE AMERICAN FERTILIZER"

AMMONIA—Anhydrous and Liquor

Commercial Solvents Corp., New York City
Spencer Chemical Co., Kansas City, Mo.

AMMONIUM NITRATE

Lion Oil Co., El Dorado, Ark.
Spencer Chemical Co., Kansas City, Mo.

BAG MANUFACTURERS—Burlap

Bemis Bros. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Virginia-Carolina Chemical Corp., Richmond, Va.

BAG MANUFACTURERS—Cotton

Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Virginia-Carolina Chemical Corp., Richmond, Va.

BAG MANUFACTURERS—Paper

Bemis Bro. Bag Co., St. Louis, Mo.
Chase Bag Co., Chicago, Ill.
Fulton Bag & Cotton Mills, Atlanta, Ga.
Hammond Bag & Paper Co., Welisburg, W. Va.
International Paper Co., Bagpak Div., New York City
Jaite Company, The, Jaite, Ohio
Raymond Bag Co., Middletown, Ohio
St. Regis Paper Co., New York City

BAGS—Dealers and Brokers

Ashcraft-Wilkinson Co., Atlanta, Ga.
Huber & Company, New York City
McIver & Son, Alex. M., Charleston, S. C.

BAG CLOSING MACHINES

St. Regis Paper Co., New York City
Union Special Machine Co., Chicago, Ill.

BAG PRINTING MACHINES

Schmutz Mfg. Co., Louisville, Ky.

BAGGING MACHINES—For Filling Sacks

Atlanta Utility Works, The, East Point, Ga.
St. Regis Paper Co., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Company, Boston, Mass.

BONE BLACK

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Huber & Company, New York City

BONE PRODUCTS

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davidson Commission Co., The, Chicago, Ill.
Huber & Company, New York City
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

BORAX AND BORIC ACID

American Potash and Chem. Corp., New York City

BROKERS

Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davidson Commission Co., The, Chicago, Ill.
Huber & Company, New York City
Jackle, Frank R., New York City
Keim, Samuel D., Philadelphia, Pa.
McIver & Son, Alex. M., Charleston, S. C.
Schrock Fertilizer Service, Congersville, Ill.
Woodward & Dickerson, Inc., Philadelphia, Pa.

BUCKETS—For Hoists, Cranes, etc.

Hayward Company, The, New York City

BUCKETS—Elevator

Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CARS AND CARTS

Atlanta Utility Works, The, East Point, Ga.
Hough Co., The Frank G., Libertyville, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

CHEMICALS

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Commercial Solvents Corp., New York City
Davison Chemical Corporation, Baltimore, Md.
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Lion Oil Company, El Dorado, Ark.
McIver & Son, Alex. M., Charleston, S. C.
Spencer Chemical Co., Kansas City, Mo.
Virginia-Carolina Chemical Corp., Richmond, Va.
Woodward & Dickerson, Inc., Philadelphia, Pa.

CHEMISTS AND ASSAYERS

Gascoyne & Co., Baltimore, Md.
Shuey & Company, Inc., Savannah, Ga.
Wiley & Company, Baltimore, Md.

CONDITIONERS

Arkansas Rice Growers Corp. Assn., Stuttgart, Ark.
Jackle, Frank R., New York City.
Keim, Samuel D., Philadelphia, Pa.

COTTONSEED PRODUCTS

Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

CYANAMID

American Agricultural Chemical Co., New York City
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City

DRYERS

Sackett & Sons Co., The A. J., Baltimore, Md.

ENGINEERS—Chemical and Industrial

Monsanto Chemical Co., St. Louis, Mo.
Chemical Construction Corp., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Titlestad Corporation, Nicolay, New York City

FERTILIZER (Mixed) MANUFACTURERS

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Davison Chemical Corporation, Baltimore, Md.
International Minerals & Chemical Corporation, Chicago, Ill.
Southern States Phosphate & Fertilizer Co., Savannah, Ga.
Virginia-Carolina Chemical Corp., Richmond, Va.

FISH SCRAP AND OIL

Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
Jackle, Frank R., New York City.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

FOUNDERS AND MACHINISTS

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

A Classified Index to Advertisers in
"The American Fertilizer"

BUYERS' GUIDE

For an Alphabetical List of all the
Advertisers, see page 33

HOPPERS

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

IMPORTERS, EXPORTERS

Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Southern States Phosphate & Fertilizer Co., Savannah, Ga.
Woodward & Dickerson, Inc., Philadelphia, Pa.

INSECTICIDES

American Agricultural Chemical Co., New York City

LEAD BURNERS

Southern Lead Burning Co., Atlanta, Ga.

LIMESTONE

American Agricultural Chemical Co., New York City
Ashcraft-Wilkinson Co., Atlanta, Ga.
McIver & Son, Alex. M., Charleston, S. C.

LOADERS—Car and Wagon

Hough Co., The Frank G., Libertyville, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Acid Making and Handling

Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MACHINERY—Ammoniating

Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Elevating and Conveying

Atlanta Utility Works, The, East Point, Ga.
Hough Co., The Frank G., Libertyville, Ill.
Hayward Company, The, New York City
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Grinding and Pulverizing

Atlanta Utility Works, The, East Point, Ga.
Bradley Pulverizer Co., Allentown, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Material Handling

Atlanta Utility Works, The, East Point, Ga.
Hayward Company, The, New York City
Hough Co., The Frank G., Libertyville, Ill.
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Mixing, Screening and Bagging

Atlanta Utility Works, The, East Point, Ga.
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MACHINERY—Power Transmission

Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

MACHINERY—Superphosphate Manufacturing

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

MANGANESE SULPHATE

McIver & Son, Alex. M., Charleston, S. C.

MINOR ELEMENTS

Tennessee Corporation, Atlanta, Ga.

MIXERS

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

NITRATE OF SODA

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.

NITROGEN SOLUTIONS

Lion Oil Company, El Dorado, Ark.
Spencer Chemical Co., Kansas City, Mo.

NITROGENOUS ORGANIC MATERIAL

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davidson Commission Co., The, Chicago, Ill.
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Jackie, Frank R., New York City.
Maryland Drying Mach. Co., Baltimore, Md.
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NOZZLES—Spray

Monarch Mfg. Works, Philadelphia, Pa.

PHOSPHATE ROCK

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Virginia-Carolina Chemical Corp., Richmond, Va.

PLANT CONSTRUCTION—Fertilizer and Acid

Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
Monsanto Chemical Co., St. Louis, Mo.
Sackett & Sons Co., The A. J., Baltimore, Md.
Southern Lead Burning Co., Atlanta, Ga.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.
Titlestad Corporation, Nicolay, New York City

POTASH SALTS—Dealers and Brokers

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Jackie, Frank R., New York City.

POTASH SALTS—Manufacturers

American Potash and Chem. Corp., New York City
Potash Co. of America, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
United States Potash Co., New York City

PRINTING PRESSES—Bag

Schmutz Mfg. Co., Louisville, Ky.

PYRITES—Brokers

Ashcraft-Wilkinson Co., Atlanta, Ga.

REPAIR PARTS AND CASTINGS

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

BUYERS' GUIDE

SCALES—Including Automatic Bagging

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.

SCREENS

Atlanta Utility Works, The, East Point, Ga.
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman's Foundry and Mach. Works, Aurora, Ind.
Sturtevant Mill Company, Boston, Mass.

SEPARATORS—Air

Kent Mill Co., Brooklyn, N. Y.
Sackett & Sons Co., The A. J., Baltimore, Md.
Sturtevant Mill Co., Boston, Mass.

SPRAYS—Acid Chambers

Monarch Mfg. Works, Inc., Philadelphia, Pa.

SULPHATE OF AMMONIA

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULPHUR

Ashcraft-Wilkinson Co., Atlanta, Ga.

SULPHURIC ACID

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
McIver & Son, Alex. M., Charleston, S. C.
Southern States Phosphate Fertilizer Co., Savannah, Ga.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

Virginia-Carolina Chemical Corp., Richmond, Va.

SUPERPHOSPHATE

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davison Chemical Corporation, Baltimore, Md.
Huber & Company, New York City
International Minerals & Chemical Corporation, Chicago, Ill.
Jackle, Frank R., New York City
Southern States Phosphate Fertilizer Co., Savannah, Ga.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

Virginia-Carolina Chemical Corp., Richmond, Va.

SUPERPHOSPHATE—Concentrates

Armour Fertilizer Works, Atlanta, Ga.
International Minerals & Chemical Corporation, Chicago, Ill.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

Virginia-Carolina Chemical Corp., Richmond, Va.

TAGS

Keener Mfg. Co., Lancaster, Pa.

TANKAGE

American Agricultural Chemical Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Davison Commission Co., The, Chicago, Ill.
International Minerals & Chemical Corporation, Chicago, Ill.
Jackle, Frank R., New York City
McIver & Son, Alex. M., Charleston, S. C.
Woodward & Dickerson, Inc., Philadelphia, Pa.

VALVES

Atlanta Utility Works, The, East Point, Ga.
Monarch Mfg. Works, Inc., Philadelphia, Pa.

Alphabetical List of Advertisers

American Agricultural Chemical Co., New York City.....	4
American Potash and Chemical Corp., New York City.....	21
Arkansas Rice Growers Coop. Assn., Stuttgart, Ark.	—
Armour Fertilizer Works, Atlanta, Ga.....	29
Ashcraft-Wilkinson Co., Atlanta, Ga.....	30
Atlanta Utility Works, The, East Point, Ga.....	—
Baker & Bro., H. J., New York City.....	Front Cover
Baughman Mfg. Co., Jerseyville, Ill.....	25
Bemis Bro. Bag Co., St. Louis, Mo.....	Facing 26
Bradley Pulverizer Co., Allentown, Pa.....	28
Chemical Construction Corp., New York City.....	17
Commercial Solvents Corp., Agricultural Div., New York City.....	2nd Cover
Davidson Commission Co., The, Chicago Ill.....	20
Davison Chemical Corp., The, Baltimore, Md.....	Back Cover
Fulton Bag & Cotton Mills, Atlanta, Ga.....	28
Gascoyne & Co., Inc., Baltimore, Md.....	34
Hammond Bag & Paper Co., Wellsburg, W. Va.....	30
Hayward Company, The, New York City.....	34
Hough Co., The Frank G., Libertyville, Ill.....	—
Huber Co., L. W. New York City.....	—
International Minerals & Chemical Corporation, Chicago, Ill.....	3
International Paper Co., Bagpak Div., New York City.....	—
Jaite Company, The Jaite, Ohio.....	—
Jackle, Frank R., New York City.....	14
Keener Mfg. Co., Lancaster, Pa.....	34
Keim, Samuel D., Philadelphia, Pa.....	33
Kent Mill Co., Brooklyn, N.Y.....	25
Link Belt Company, Chicago.....	—
Lion Oil Company, El Dorado, Ark.....	6
McIver & Son, Alex. M., Charleston, S. C.....	29
Monarch Mfg. Works, Inc., Philadelphia, Pa.....	34
Potash Co. of America, New York City.....	3rd Cover
Raymond Bag Co., Middletown, Ohio.....	23
Sackett & Sons Co., The A. J., Baltimore, Md.....	—
Schmutz Mfg. Co., Louisville, Ky.....	—
Shuey & Company, Inc., Savannah, Ga.....	34
Southern Lead Burning Co. Atlanta, Ga.....	26
Southern States Phosphate & Fertilizer Co., Savannah, Ga.....	—
Spencer Chemical Co., Kansas City, Mo.....	—
Stedman's Foundry and Machine Works, Aurora, Ind.....	24
St. Regis Paper Co., New York City.....	18, 19
Sturtevant Mill Co., Boston, Mass.....	—
Tennessee Corporation, Atlanta, Ga.....	—
Texas Gulf Sulphur Co., New York City.....	5
Titlestad Corporation, Nicolay, New York City.....	25
Union Special Machine Co., Chicago, Ill.....	—
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.....	25
United States Potash Co., New York City.....	27
Virginia-Carolina Chemical Corp., Richmond, Va.....	22
Wiley & Company, Inc., Baltimore, Md.....	34
Woodward & Dickerson Inc., Philadelphia, Pa.....	16

FEEDING AND FERTILIZER MATERIALS

(SINCE 1898)

SAMUEL D. KEIM
1343 ARCH STREET
PHILADELPHIA 7, PA.

MONARCH SPRAYS



This is our Fig. 645 Nozzle. Used for Scrubbing Acid Phosphate Gases. Made for "full" or "hollow" cone in Brass and "Everdur." We also make "Non-Clog" Nozzles in Brass and Steel, and

Stoneware Chamber Sprays now used by nearly all chamber spray sulphuric acid plants.

CATALOG 6-C

MONARCH MFG. WORKS, INC.

2501 East Ontario St., Philadelphia, Pa.

SHUEY & COMPANY, Inc.

Specialty: Analysis of Fertilizer Materials and Phosphate Rock. Official Chemists for Florida Hard Rock Phosphate Export Association. Official Weigher and Sampler for the National Cottonseed Products Association at Savannah; also Official Chemists for National Cottonseed Products Association

115 E. BAYSTREET, SAVANNAH, GA.

HAYWARD BUCKETS



Use this Hayward Class "K" Clam Shell for severe superphosphate digging and handling.

THE HAYWARD CO., 202 Fulton St., New York



GASCOYNE & CO., INC.

Established 1887

Chemists and Assayers

Public Weighers and Samplers

27 South Gay Street - BALTIMORE, MD.



KEENER MFG. CO., TAG MAKERS

438 Lancaster Ave., LANCASTER, PA.

WILEY & COMPANY, Inc.

Analytical and Consulting Chemists

BALTIMORE 2, MD.

Dictionary of Fertilizer Materials and Terms

A new revised edition containing complete descriptions and analyses, together with A. O. A. C. official definitions, of all plant foods and materials used in the manufacture of chemical fertilizers.

The new edition is enlarged in content and size—6 x 9 inches. As a reference booklet for all who are interested in the manufacture or use of chemical fertilizers, the dictionary will prove invaluable. For the agricultural chemist as well as the fertilizer salesman, it will serve as an authoritative source of information that will give quick and accurate answers to questions that arise daily.

PRICE \$1.00 postpaid

WARE BROS. COMPANY

1900 CHESTNUT STREET
PHILADELPHIA 3, PA.



Quality and Service

You are assured on two important points—even in today's abnormal market—when you deal with P. C. A.

1. Quality . . . our Red Indian products are of unquestioned excellence.
2. Service . . . we make every effort to give you the service you want and deserve.

When better service is possible be assured P. C. A. will give it. Meanwhile your confidence, and your patience are greatly appreciated.

POTASH COMPANY OF AMERICA

CARLSBAD, NEW MEXICO

GENERAL SALES OFFICE . . . 50 Broadway, New York, N. Y. • MIDWESTERN SALES OFFICE . . . First National Bank Bldg., Peoria, Ill.
SOUTHERN SALES OFFICE . . . Candler Building, Atlanta, Ga.



By spreading superphosphate in dairy barns, poultry houses and hog pens, the farmer can double the fertilizing value of the manure and reduce odors, undesirable bacteria and flies.

The granular porous nature of Davison *Granulated* Superphosphate makes it especially effective for this use. Moreover, it gives the added advantages of wasteless, dustless ease of handling, cake-free storage and reduced slippage.

Take full advantage of this opportunity to increase your wintertime sales and assure yourself of uniform quality, superior service—check with Davison now on your requirements for—

GRANULATED SUPERPHOSPHATES

THE DAVISON  CHEMICAL CORPORATION
Progress through Chemistry BALTIMORE-3, MD.

EXCLUSIVE PRODUCERS OF GRANULATED AND ONE OF THE OLDEST
 AND LARGEST PRODUCERS OF NORMAL GRADES OF SUPERPHOSPHATES

